DATE 30 Sep 03

USAMMDA INFORMATION PAPER

PRODUCT: CERAMIC OXYGEN GENERATOR

DESCRIPTION: The Ceramic Oxygen Generator (COG) is a potential solution to the logistical burden imposed by the use of oxygen cylinders that weigh 11 pounds (1bs), and contain only 18 ounces of oxygen. A COG will be capable of supplying oxygen using internal batteries, and have a weight and size similar to a "D" sized oxygen cylinder. The technology being developed uses a metal reinforced composite, thin-film ceramic membrane to generate high purity oxygen using only 30 watts of electrical power for every liter of oxygen produced. Typically, 3 to 5 liters per minute (lpm) of oxygen are given to a patient. The total electrical power required for a patient will be between 100 and 160 watts, in contrast to current oxygen concentrators, which use 800 watts to supply 3 lpm of oxygen.

PROGRAM RELEVANCE to the ARMY: This product supports both the core mission of the Army and the Army Transformation. Of the Army's core competencies, this product supports "Forcible Entry Operations," "Sustained Land Dominance," and, "Support of Civil Authorities." Oxygen is a key element in the resuscitation of combat casualties. The COG will reduce the medical footprint both during initial entry and during re-supply by eliminating the need to supply one 150 lb oxygen cylinder per day for each patient requiring oxygen. A 280-bed hospital will require 5000 lbs of oxygen cylinders per day; this could be accomplished using 500 lbs of oxygen generators that never need to be replaced. This product supports Future Operational Capabilities: MD-02-001 Clearing the Battlefield, MD-02-002 Hospitalization, and MD-02-004 Combat Health Logistics.

ISSUES/ACTIONS:

- Oxygen generator ceramic cells have met performance goals and have been operating in both cyclic and continuous modes in excess of six months. These cells continue to operate.
- The heat exchanger design has been completed and has been fabricated. The temperature control system and battery system are the elements needed to complete the design of the portable oxygen generator. The most difficult design challenge is making these items small enough to fit in the desired size envelope while maintaining a high level of efficiency, which has a direct effect on battery life.
- Cell development is being focused on constructing stable high output cells that use low cost, easy to process materials.

ADDITIONAL INFORMATION:

BPL # 413
DA PROJECT/TASK: Trauma Management – PE/PROJ 643807/836JG
MAMP RANK: 12/36
ARMY ORD: A draft ORD has been initiated.

SCHEDULE:

MS A	1QFY04
MS B	2QFY05
MS C	4QFY06

For additional information, contact: Applied Medical Systems, DSN 343-7582, Comm. 301-619-7582